

Amendments to the Claims

The listing of claims will replace all prior versions, and listings of claims in the application.

1. *(Currently amended)* A method of preparing a user recommendation comprising:

generating, in memory, a sparse unary ratings matrix from a user's selected preferences, wherein said user's selected preferences are represented as binary data entries in said sparse unary ratings matrix, wherein each binary data entry has a value of either zero or one;

forming a plurality of data structures representing said sparse unary ratings matrix;

forming in a data processing device a runtime recommendation model from said plurality of data structures;

determining a recommendation from said runtime recommendation model in response to a request for a recommendation; and

providing said recommendation in response to said request.

2. *(Original)* The method of claim 1 further comprising calculating a unary multiplicity voting recommendation from said runtime recommendation model.

3. *(Original)* The method claim 1 further comprising calculating a non-unary multiplicity voting recommendation from said runtime recommendation model.

4. *(Previously presented)* The method of claim 2 wherein said calculating a unary multiplicity voting recommendation comprises calculating an anonymous recommendation.

5. *(Previously presented)* The method of claim 2 wherein said calculating a unary multiplicity voting recommendation comprises calculating a personalized recommendation.

6. *(Previously presented)* The method of claim 3 wherein said calculating a non-unary multiplicity voting recommendation comprises calculating an anonymous recommendation.

7. *(Previously presented)* The method of claim 3 wherein said calculating a non-unary multiplicity voting recommendation comprises calculating a personalized recommendation.

8. *(Currently amended)* The method of claim 1,

wherein said ~~step~~ forming a runtime recommendation model from said plurality of data structures comprises:

mapping said sparse unary ratings matrix into a plurality of sub-space ratings matrices, said mapping comprising multiplying said unary ratings matrices by a mappings matrix between said unary ratings matrices and a plurality of categories, and wherein each of said sub-space ratings matrices corresponds to one of said plurality of categories.

9. (*Withdrawn*) A method of preparing a recommendation to be accessed by a user comprising the steps of:

- providing a sparse ratings matrix;
- banding said sparse ratings matrix;
- distributing said banded sparse ratings matrix to a plurality of computing nodes, wherein each of said computing nodes generates an output;
- forming a runtime recommendation model from said output of said plurality of computing nodes;
- determining a recommendation from said runtime recommendation model in response to a request from a user; and
- providing said recommendation to said user.

10. (*Withdrawn*) A method of preparing a recommendation to be accessed by a user comprising the steps of:

- providing a sparse ratings matrix;
- striping said sparse ratings matrix;
- distributing said striped sparse ratings matrix to a plurality of computing nodes, wherein each of said computing nodes generates an output;
- forming a runtime recommendation model from said output of said plurality of computing nodes;
- forming a runtime recommendation model from said plurality of sub-space ratings matrix;
- determining a recommendation from said runtime recommendation model in response to a request from a user; and

providing said recommendation to said user.

11. *(Currently amended)* A method of preparing a user recommendation comprising:

generating in memory a sparse unary ratings matrix including ratings data represented as binary data entries, wherein each binary data entry has a value of either zero or one;

providing an update ratings data structure;

forming a plurality of data structures representing said sparse unary ratings matrix;

forming in a data processing device a runtime recommendation model from said plurality of data structures and said update ratings data structure;

determining a recommendation from said runtime recommendation model in response to a request for a recommendation; and

providing said recommendation in response to said request.

12. *(Original)* The method of claim 11 further comprising calculating a unary multiplicity voting recommendation from said runtime recommendation model.

13. *(Original)* The method of claim 11 further comprising calculating a non-unary multiplicity voting recommendation from said runtime recommendation model.

14. *(Previously presented)* The method of claim 12 wherein said calculating a unary multiplicity voting recommendation comprises calculating an anonymous recommendation.

15. *(Previously presented)* The method of claim 12 wherein said calculating a unary multiplicity voting recommendation comprises calculating a personalized recommendation.

16. *(Previously presented)* The method of claim 13 wherein said calculating a non-unary multiplicity voting recommendation comprises calculating an anonymous recommendation.

17. *(Previously presented)* The method of claim 13 wherein said calculating a non-unary multiplicity voting recommendation comprises calculating a personalized recommendation.

18. *(Previously presented)* The method of claim 11, further comprising:

mapping said sparse unary ratings matrix into a plurality of sub-space ratings matrices, said mapping comprising multiplying said unary ratings matrices by a mapping matrix between said unary ratings matrices and a plurality of categories, and ~~wherein~~ each of said sub-space ratings matrices corresponding to one of said plurality of categories.

19. *(Withdrawn)* The method of claim 1, wherein forming a runtime recommendation model from a plurality of data structures, comprises:

forming a first recommendation model from said plurality of data structures; and

perturbing said first recommendation model to generate a runtime recommendation model.

20-26. *(Canceled)*.

27. *(Withdrawn)* The method of claim 1, wherein forming a runtime recommendation model from a plurality of data structures, comprises:

forming a first recommendation model from said plurality of data structures;

truncating said first recommendation model to generate a runtime recommendation model.

28 - 34. *(Canceled)*.

35. *(Withdrawn)* A method of preparing a recommendation to be accessed by a user comprising the steps of:

providing a first ratings matrix;

providing a second ratings matrix;

forming a runtime recommendation model from a cross-set of co-occurrences of said first ratings matrix and said second ratings matrix;

calculating a recommendation from said runtime recommendation model in response to a request from a user; and

providing said recommendation to said user.

36. *(Currently amended)* A method of preparing a user recommendation in a first recommendation system, comprising:

receiving at the first recommendation system a runtime recommendation model from a second recommendation system, wherein the runtime model is formed from a plurality of data structures representing a unary array of entries

that can be arithmetically manipulated, wherein data in the unary array of entries is binary data, wherein each binary data entry has a value of either zero or one, and wherein a majority of the entries in the array are zero;

receiving a request for a recommendation;

generating in a data processing device of the first recommendation system

a recommendation using the received runtime recommendation model; and

transmitting the recommendation.

37. *(Previously presented)* The method of claim 36, wherein said generating a recommendation comprises:

calculating a unary multiplicity voting recommendation from the received runtime recommendation model; and

generating an anonymous recommendation.

38. *(Previously presented)* The method of claim 36, wherein said generating a recommendation comprises:

calculating a unary multiplicity voting recommendation from the received runtime recommendation model; and

generating a personalized recommendation.

39. *(Previously presented)* The method of claim 36, wherein said generating a recommendation comprises:

calculating a non-unary multiplicity voting recommendation from the received runtime recommendation model; and

generating an anonymous recommendation.

40. (*Previously presented*) The method of claim 36, wherein said generating a recommendation comprises:

calculating a non-unary multiplicity voting recommendation from the received runtime recommendation model; and
generating a personalized recommendation.

41. (*Currently amended*) A method for generating a runtime recommendation model in a first recommendation system comprising:

retrieving a unary array of entries that can be arithmetically manipulated, wherein data in the unary array of entries is binary data, wherein each binary data entry has a value of either zero or one, and wherein a majority of the entries in the array are zero;

receiving an update to the array of entries;

generating in a data processing device of the first recommendation system the runtime recommendation model from a plurality of data structures representing the unary array of entries; and

providing the runtime recommendation model to a second recommendation system, wherein the second recommendation system generates a recommendation using the runtime recommendation model.

42. (*New*) A data processing device, comprising:

a processor configured to generate in memory a sparse unary ratings matrix from a user's selected preferences, wherein said user's selected preferences

are represented as binary data entries in said sparse unary ratings matrix, wherein each binary data entry has a value of either zero or one;

wherein the processor is configured to form a plurality of data structures representing said sparse unary ratings matrix;

wherein the processor is configured to store said plurality of data structures in the memory;

wherein the processor is configured to form a runtime recommendation model from said plurality of data structures; and

wherein the processor is configured to determine a recommendation from said runtime recommendation model in response to a request for a recommendation.

43. (*New*) A data processing device comprising:

means for generating in memory a sparse unary ratings matrix from a user's selected preferences, wherein said user's selected preferences are represented as binary data entries in said sparse unary ratings matrix, wherein each binary data entry has a value of either zero or one, and wherein a majority of the entries in said sparse unary ratings matrix are zero;

means forming a plurality of data structures representing said sparse unary ratings matrix;

means for storing said plurality of data structures in the memory;

means for forming a runtime recommendation model from said plurality of data structures; and

means for determining a recommendation from said runtime recommendation model in response to a request for a recommendation.

44. (*New*) A computer readable storage medium including control logic stored therein that, when executed by a processor, enables the computer to generate a user recommendation according to a method comprising:

generating in memory a sparse unary ratings matrix from a user's selected preferences, wherein said user's selected preferences are represented as binary data entries in said sparse unary ratings matrix, wherein each binary data entry has a value of either zero or one;

forming a plurality of data structures representing said sparse unary ratings matrix;

forming a runtime recommendation model from said plurality of data structures; and

determining a recommendation from said runtime recommendation model in response to a request for a recommendation.